GitHub.io Manual Deployment

Understanding Static Site Hosting by Deploying Hugo's Public Folder

Learning Objectives

By the end of this session, you will:

✅ **Understand** what GitHub Pages hosts (static files)
✅ **Deploy** Hugo's public/ folder manually to GitHub Pages
✅ **Learn** the fundamentals of static site hosting
✅ **Create** your first live portfolio URL
✅ **Troubleshoot** common deployment issues

Goal: Get your Hugo portfolio live by understanding exactly what gets deployed!

What is GitHub Pages?

Simple Definition:

> GitHub Pages = A **free web hosting service** that serves static files from your GitHub repository

Key Concepts:

- 🌐 **Static hosting**: Serves HTML, CSS, JS files directly
- 🆓 **Free service**: No hosting costs for public repositories
- ⚡ **Fast delivery**: Global CDN (Content Delivery Network)
- 🔒 **HTTPS included**: Automatic SSL certificates
- 📱 **Mobile optimized**: Works on all devices

Understanding Static vs Dynamic Sites

Dynamic Sites (Traditional):

```
User Request → Web Server → Database → PHP/Python → HTML Response
```

- **Examples**: WordPress, Laravel applications
- **Requires**: Server, database, runtime environment
- **Cost**: $10-50/month hosting

Static Sites (GitHub Pages):

```
User Request → Pre-built HTML Files → Instant Response
```

- **Examples**: Hugo sites, documentation, portfolios
- **Requires**: Only HTML, CSS, JS files
- **Cost**: Free!

What Hugo Generates: The Public Folder

Hugo Build Process:

```
# Your Hugo source code
hugo

# Generates a static website in the public/ folder
```

What's in public/ folder:

```
public/
├── index.html              # Homepage
├── about/
│   └── index.html          # About page
├── projects/
│   ├── index.html          # Projects listing
│   └── student-api/
│       └── index.html      # Individual project
├── css/                    # Stylesheets
```

GitHub Pages Repository Types

User/Organization Pages (What We'll Use):

```
Repository name: yourusername.github.io
URL: https://yourusername.github.io
Content: Main website (portfolio, company site)
```

Project Pages:

```
Repository name: any-project-name
URL: https://yourusername.github.io/project-name
Content: Documentation for specific projects
```

Today's Focus: User pages for your main portfolio

Prerequisites Check

Required Before We Start:

```
# 1. Hugo site built successfully
cd my-portfolio
hugo
ls public/  # Should show HTML files

# 2. GitHub account ready
# Visit github.com and sign in

# 3. Git configured
git config --global user.name "Your Name"
git config --global user.email "your.email@example.com"
```

Step 1: Build Your Hugo Site

Clean Build Process:

```
# Navigate to your Hugo site
cd my-portfolio

# Remove old build (if exists)
rm -rf public/

# Build fresh static site
hugo

# Verify build success
ls public/
```

Expected Output:

```
public/
├── 404.html
├── index.html
├── index.xml
├── about/
├── projects/
├── posts/
├── css/
├── js/
└── images/
```

Common Build Issues:

- **Draft content**: Set `draft = false` in front matter
- **Base URL**: Check `baseURL` in `hugo.toml`
- **Missing images**: Verify paths in static/ folder

Add markdown files

- Use the `hugo new` command to add markdown files.
- Use the `hugo` command to generate files in the `public` directory to share.

Test Your Build Locally:

```
# Serve the built site (not Hugo server)
cd public
python -m http.server 8000

# Visit: http://localhost:8000
# This is exactly what GitHub Pages will serve!
```

What to Check:

✅ **Homepage loads** correctly
✅ **All pages accessible** via navigation
✅ **Images display** properly
✅ **Styling works** completely
✅ **Links function** between pages

Step 2: Create GitHub Repository

Repository Creation:

1. **Go to GitHub**: Sign in to github.com
2. **Click "New Repository"**
3. **Repository Name**: `yourusername.github.io`
   - ⚠️ **Must match your username exactly**
   - Example: If username is `johndoe`, repo must be `johndoe.github.io`
4. **Visibility**: Public (required for free GitHub Pages)
5. **Initialize**: ✅ Add a README file
6. **Click "Create Repository"**

Why This Specific Name?

```
Repository: johndoe.github.io
GitHub automatically recognizes this pattern
Creates a user page at: https://johndoe.github.io
Serves content from the main branch root directory
```

Important Notes:

- **Case sensitive**: Must match your username exactly
- **Public required**: Private repos need GitHub Pro for Pages
- **One per account**: You get one user page per GitHub account

Step 3: Clone Your Repository

Clone to Your Computer:

```
# Clone the empty repository
git clone https://github.com/yourusername/yourusername.github.io.git

# Navigate into the repository
cd yourusername.github.io

# Check what's there
ls -la
# Should see: README.md and .git/ folder
```

Repository Structure (Initial):

```
yourusername.github.io/
├── .git/              # Git version control
└── README.md          # Repository description
```

Step 4: Copy Hugo's Public Folder

Manual Copy Method:

```
# From your Hugo site directory
cd ../my-portfolio

# Copy everything from public/ to your GitHub repo
cp -r public/* ../yourusername.github.io/

# Navigate to GitHub repo
cd ../yourusername.github.io

# Verify copy worked
ls -la
```

What You Should See:

```
yourusername.github.io/
├── .git/
```

Alternative: Organized Copy

```bash
# More careful approach
cd yourusername.github.io

# Remove default README (optional)
rm README.md

# Copy public folder contents
cp -r ../my-portfolio/public/* .

# Create custom README for your portfolio
echo "# My Professional Portfolio" > README.md
echo "Live site: https://yourusername.github.io" >> README.md
```

Step 5: Deploy to GitHub

Add, Commit, and Push:

```
# Check what files are ready to commit
git status

# Add all files
git add .

# Create descriptive commit message
git commit -m "Deploy Hugo portfolio site

- Add a complete static website
- Include homepage, projects, and about pages
- All images and styling included
- Ready for GitHub Pages hosting"

# Push to GitHub
git push origin main
```

Understanding What Happens:

```
Local Computer → GitHub Repository → GitHub Pages
     ↓                    ↓                ↓
  Static files     Files stored in repo   Live website
  (public/)        (version controlled)   (served to users)
```

Timeline:

- **Git push**: Immediate (uploads files)
- **Pages deployment**: 1-5 minutes (processing)
- **Global propagation**: 5-10 minutes (worldwide)

Step 6: Enable GitHub Pages

Configure GitHub Pages:

1. **Go to your repository** on GitHub
2. **Click "Settings"** tab (top menu)
3. **Scroll to "Pages"** in left sidebar
4. **Source section**:
    - Select **"Deploy from a branch"**
    - **Branch**: main
    - **Folder**: / (root)
5. **Click "Save"**

GitHub Pages Configuration Options:

```
Source Options:
├── Deploy from a branch (what we're using)
│   ├── Branch: main, gh-pages, or any branch
│   └── Folder: / (root) or /docs
└── GitHub Actions (advanced - next lesson)
```

Our Setup:

- **Source**: Deploy from a branch
- **Branch**: main
- **Folder**: / (root)
- **Content**: Static HTML files from Hugo's public/

Step 7: Verify Your Live Site

Access Your Website:

```
URL: https://yourusername.github.io
Example: https://johndoe.github.io
```

First Deployment:

- **Processing time**: 1-5 minutes
- **Status check**: Repository Settings > Pages
- **Green checkmark**: Deployment successful
- **Error message**: Check build logs

Testing Checklist:

✅ **Homepage loads** without errors
✅ **Navigation menu** links work correctly
✅ **About page** displays your information
✅ **Projects section** shows your work
✅ **Images load** properly
✅ **Mobile responsive** on phone/tablet
✅ **HTTPS works** (should be automatic)
✅ **Professional appearance** matches local version

Step 8: Understanding File Structure

What GitHub Pages Serves:

```
GitHub Repository Root:
├── index.html            → https://yourusername.github.io/
├── about/
│   └── index.html        → https://yourusername.github.io/about/
├── projects/
│   ├── index.html        → https://yourusername.github.io/projects/
│   └── student-api/
│       └── index.html    → https://yourusername.github.io/projects/student-api/
└── css/
    └── style.css         → https://yourusername.github.io/css/style.css
```

URL Mapping:

- **Repository file → Website URL**
- **Root index.html → Homepage**
- **Folder/index.html → Clean URLs** (no .html)

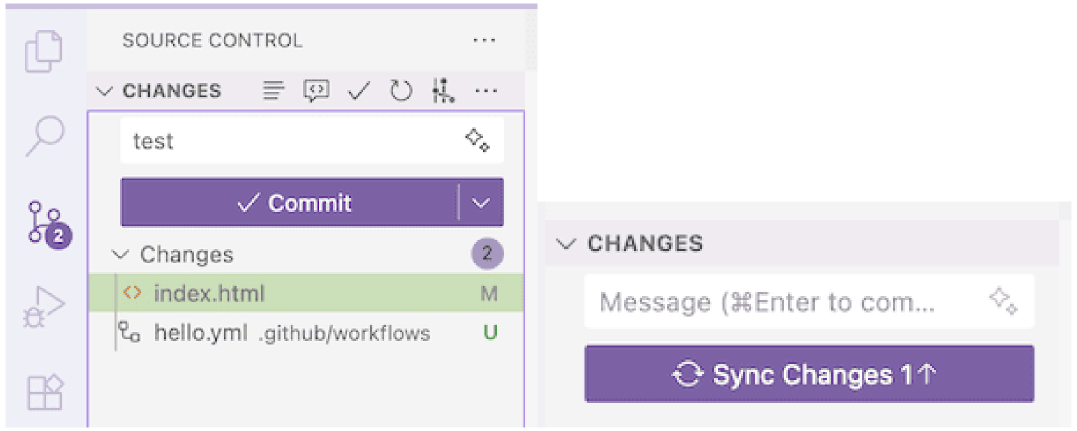
Step 9: Making Updates

When You Change Your Hugo Site:

```
# 1. Edit content in the Hugo site
cd my-portfolio
# Make changes to content/, themes/, etc.

# 2. Build updated site
hugo

# 3. Copy new build to GitHub repo
cp -r public/* ../yourusername.github.io/

# 4. Commit and push changes (Manual)
cd ../yourusername.github.io
git add .
git commit -m "Update portfolio: added new project"
git push origin main
```

Use VSCode for commit & push (recommended)

1. Open the cloned GitHub.io directory using VSCode.
2. Commit & Push (Sync) so VSCode takes care of everything



Each update requires this manual process!

(Next lesson: We'll automate this with GitHub Actions)

Understanding GitHub Pages Limitations

What GitHub Pages Can Host:

✅ **Static HTML/CSS/JS** files
✅ **Images, fonts, documents**
✅ **Client-side applications** (React, Vue after build)
✅ **Static site generators** (Hugo, Jekyll, Gatsby)

What GitHub Pages Cannot Host:

❌ **Server-side code** (PHP, Python, Node.js)
❌ **Databases** (MySQL, PostgreSQL)
❌ **Server processing** (form handling, APIs)
❌ **File uploads** or user authentication

Perfect for portfolios, documentation, blogs!

Performance and Best Practices

Optimizing Your Site:

```
# Minify HTML/CSS/JS (Hugo can do this)
hugo --minify

# Optimize images before adding to Hugo
# Use WebP format, compress large images
# Recommended: <500KB per image

# Use CDN for external resources
# Google Fonts, jQuery, etc.
```

Professional Checklist:

✅ **Fast loading** (< 3 seconds)
✅ **Mobile responsive** design
✅ **Professional content** and imagery
✅ **Working contact** information
✅ **Error-free** links and navigation
✅ **SEO optimized** (titles, descriptions)

Sharing Your Portfolio

Professional Uses:

```
Resume/CV: Include your GitHub Pages URL
Email Signature: https://yourusername.github.io
Business Cards: Print your professional domain
LinkedIn Profile: Add website link
Job Applications: Live portfolio demonstration
```

Social Sharing:

- **Easy to remember**: Short, clean URL
- **Professional appearance**: Custom domain look
- **Always accessible**: 24/7 global availability
- **No hosting costs**: Free professional presence